

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/36146

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 33/543
US CL : 435/287.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,110,749 A (OBREMSKI et al) 29 August 2000 (29.08.2000), see entire document.	1-17

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Ω"

document member of the same patent family

Date of the actual completion of the international search

28 May 2004 (28.05.2004)

Date of mailing of the international search-report

21 JUN 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703) 305-3230

Authorized officer

Christopher L. Chin

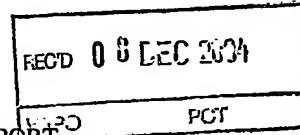
Telephone No. (571) 272-1600

INTERNATIONAL SEARCH REPORT

PCT/US03/36146

Continuation of B. FIELDS SEARCHED Item 1:
422/82.05, 82.08, 82.11;
435/6, 287.1, 287.2, 288.7, 808;
436/172, 805

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 96196-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/36146	International filing date (day/month/year) 13 November 2003 (13.11.2003)	Priority date (day/month/year) 13 November 2002 (13.11.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): G01N 33/543 and US Cl.: 435/287.1		
Applicant WULFMAN, DAVID R.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 17 sheets.

3. This report contains indications relating to the following items:
 - I Basis of the report
 - II Priority
 - III Non-establishment of report with regard to novelty, inventive step and industrial applicability
 - IV Lack of unity of invention
 - V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI Certain documents cited
 - VII Certain defects in the international application
 - VIII Certain observations on the international application

Date of submission of the demand 10 June 2004 (10.06.2004)	Date of completion of this report 14 November 2004 (14.11.2004)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer  Christopher L. Chin Telephone No. (571) 272-1600

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

<p>International application No. PCT/US03/36146</p>

I. Basis of the report1. With regard to the elements of the international application:^{*}

the international application as originally filed.

the description:

pages 1-25 _____ as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.

the claims:

pages NONE _____, as originally filed
pages 26-41 _____, as amended (together with any statement) under Article 19
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.

the drawings:

pages 1-26 _____, as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.

the sequence listing part of the description:

pages NONE _____, as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

the language of publication of the international application (under Rule 48.3(b)).

the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

contained in the international application in printed form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

the description, pages NONE

the claims, Nos. NONE

the drawings, sheets/fig NONE

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).^{**}

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US03/36146

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- restricted the claims.
- paid additional fees.
- paid additional fees under protest.
- neither restricted nor paid additional fees.

2. This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention is accordance with Rules 13.1, 13.2 and 13.3 is

- complied with.
- not complied with for the following reasons:

Please See Continuation Sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- all parts.
- the parts relating to claims Nos. _____

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/36146**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>1-140</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>1-140</u>	YES
	Claims <u>NONE</u>	NO
Industrial Applicability (IA)	Claims <u>1-140</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Claims 1-140 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest waveguide apparatus and methods with the specific limitations recited in claims 1-140.

Claims 1-140 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/36146

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

IV. 3. This Authority considers that the requirement of unity of invention is accordance with Rules 13.1, 13.2 and 13.3 is not complied with for the following reasons:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-21 and 27-92, drawn to waveguide apparatus and a nucleic acid detection method.

Group II, claim(s) 23-26, drawn to a process for deconvoluting a waveform.

Group III, claim(s) 93-95, drawn to a multiplex waveguide.

Group IV, claim(s) 96-104, drawn to an apparatus to detect hybridized DNA.

Group V, claim(s) 105-113, drawn to a waveguide apparatus with a circular waveguide.

Group VI, claim(s) 114-140, drawn to a DNA detection apparatus with a cylindrical waveguide.

The inventions listed as Groups I-VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Group I and II - Group II lacks unity with Group I because Groups I and II do not share the same special technical feature. The method of Group II does not use the apparatus of Group I.

Group I and III - Group III lacks unity with Group I because Groups I and III do not share the same special technical feature. Group III is a separate apparatus from the apparatus of Group I. The apparatus of Group III comprises a plurality of waveguides whereas the apparatus of Group I only has one waveguide.

Group I and IV - Group IV lacks unity with Group I because Groups I and IV do not share the same special technical feature. Group IV is a separate apparatus from the apparatus of Group I. The apparatus of Group IV includes a waveguide with at least one tooth whereas the apparatus of Group I has a waveguide with no tooth.

Group I and V - Group V lacks unity with Group I because Groups I and V do not share the same special technical feature. Group V is a separate apparatus from the apparatus of Group I. The apparatus of Group V includes a circular waveguide whereas the apparatus of Group I does not have a circular waveguide.

Group I and VI - Group VI lacks unity with Group I because Groups I and VI do not share the same special technical feature. Group VI is a separate apparatus from the apparatus of Group I. The apparatus of Group VI includes a circular waveguide whereas the apparatus of Group I does not have a circular waveguide.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record.**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.